E

BD|SENSORS pressure measurement

Operating Manual CE

Pressure transmitter DMP 303, DMP 304

DMP 304

www.bdsensors.com

Headquarter Western Europe / International

BD SENSORS GmbH
BD-Sensors-Str. 1
D - 95199 Thierstein
Germany

Tel.: +49 (0) 92 35 / 98 11-0
Fax: +49 (0) 92 35 / 98 11-11

Headquarter Eastern Europe

BD SENSORS s.r.o.
Hradištská 817
CZ - 687 08 Buchlovice
Czech Republic

Tel.: +42 (0) 5 72 / 4 11-0 11
Fax: +42 (0) 5 72 / 4 11-4 97

Russia

BD SENSORS RUS
39a, Varshavskoe shosse
RU - Moscow 117105
Russia

Tel.: +7 (0) 9 59 81 / 09 63
Fax: +7 (0) 9 57 95 / 07 21

further agencies in:

EUROPE

- Belgium
- Denmark
- UK
- France
- Greece
- Italy
- Lithuania
- Luxemburg
- Netherlands
- Norway
- Poland
- Romania
- Sweden
- Switzerland
- Slovakia
- Spain
- Turkey
- Ukraine

ASIA

- Iran
- Israel
- Kazakhstan
- Taiwan
- Thailand

AUSTRALIA

The addresses of our distribution partners are listed on our homepage **www.bdsensors.com**. It is possible to download data sheets, operating manuals, ordering codes and certificates, as well.

1. General information

1.1 Information on the operating manual

This operating manual contains important information on proper usage of the device. Read this operating manual carefully before installing and starting up the pressure measuring device.

Adhere to the safety notes and operating instructions which are given in the operating manual. Additionally applicable regulations regarding occupational safety, accident prevention as well as national installation standards and engineering rules must be complied with!

This operating manual is part of the device, must be kept nearest its location, always accessible to all employees.

This operating manual is copyrighted. The contents of this operating manual reflect the version available at the time of printing. It has been issued to our best knowledge. However, errors may have occurred. BD SENSORS is not liable for any incorrect statements and their effects.

– Technical modifications reserved –

1.2 Symbols used

⚠ DANGER! – dangerous situation, which may result in death or serious injuries

⚠ WARNING! – potentially dangerous situation, which may result in death or serious injuries

⚠ CAUTION! – potentially dangerous situation, which may result in minor injuries

! CAUTION! – potentially dangerous situation, which may result in physical damage

☞ NOTE – tips and information to ensure a failure-free operation

1.3 Target group

⚠ WARNING! To avoid operator hazards and damages of the device, the following instructions have to be worked out by qualified technical personnel.

1.4 Limitation of liability

By non-observance of the operating manual, inappropriate use, modification or damage, no liability is assumed and warranty claims will be excluded.

1.5 Intended use

- The pressure transmitter **DMP 303** / **DMP 304** has been especially designed for the overpressure measuring.
- It is the operator's responsibility to check and verify the suitability of the device for the intended application. If any doubts remain, please contact our sales department in order to ensure proper usage. BD SENSORS is not liable for any incorrect selections and their effects!
- Permissible media are gases or liquids. In addition it has to be ensured, that this medium is compatible with the media wetted parts. For questions please contact our sales team!
- The technical data listed in the current data sheet are engaging and must be complied with. If the data sheet is not available, please order or download it from our homepage. (http://www.bdsensors.com/products/download/datasheets)

⚠ WARNING! Danger through improper usage!

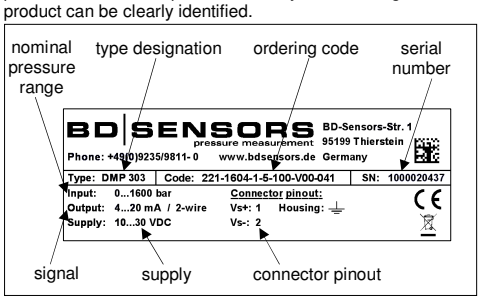
1.6 Package contents

Please verify that all listed parts are undamaged included in the delivery and check for consistency specified in your order:

- pressure transmitter
- mounting instructions

2. Product identification

The device can be identified by its manufacturing label. It provides the most important data. By the ordering code the product can be clearly identified.



Flg. 1 manufacturing label

! The manufacturing label must not be removed from the device!

3. Mechanical installation

3.1 Mounting and safety instructions

⚠ WARNING! Install the device only when depressurized and currentless!

⚠ WARNING! This device may only be installed by qualified technical personnel who has read and understood the operating manual!

! Handle this high-sensitive electronic precision measuring device with care, both in packed and unpacked condition!

! There are no modifications/changes to be made on the device.

! Do not throw the package/device!

! To avoid damaging the diaphragm, remove packaging and protective cap directly before starting assembly. The delivered protective cap has to be stored!

! Place the protective cap on the pressure port again immediately after disassembling.

! Handle the unprotected diaphragm very carefully - it is very sensitive and may be easily damaged.

! Do not use any force when installing the device to prevent damage of the device and the plant!

! For installations outdoor and in damp areas following these instructions:

- To prevent moisture admission in the plug the device should be installed electrically after mounting, at once. Otherwise a moisture admission has to be blocked e.g. by using a suitable protection cap. (The ingress protection in the data sheet is valid for the connected device.)
- Choose an assembly position, which allows the flow-off of splashed water and condensation. Avoid permanent fluid at sealing surfaces!
- When using a cable gland or outlet device, turn the outgoing cable downwards. If the cable has to be turned upwards, then point it downward so the moisture can drain.
- Install the device in such a way that it is protected from direct solar irradiation. Direct solar irradiation can lead to the permissible operating temperature being overstepped in the worst case. By this the operability of the device can be affected or damaged. If the internal pressure increases due to solar irradiation, measurement errors may be caused.

☞ Take note that no assembly stress occurs at the pressure port, since this may cause a shifting of the characteristic curve. This is especially important for very small pressure ranges as well as for devices with a pressure port made of plastic.

☞ In hydraulic systems, position the device in such a way that the pressure port points upward (ventilation).

☞ Provide a cooling line when using the device in steam piping.

☞ If there is any danger of damage by lightning or overpressure when the device is installed outdoor, we suggest putting a sufficiently dimensioned overpressure protection between the supply or switch cabinet and the device.

3.2 General installation steps

- Carefully remove the pressure measuring device from the package and dispose of the package properly.
- Go ahead as detailed in the specific instructions below.

3.3 Installation steps for EN 837

- Use a suitable seal, corresponding to the medium and the pressure input (e. g. a cooper gasket).
- Ensure that the sealing surface of the taking part is perfectly smooth and clean.
- Screw the device into the corresponding thread by hand.
- Tighten it with a wrench (for G1/4": approx. 20 Nm; for G1/2": approx. 50 Nm).

3.4 Installation steps for internal threads M20x1.5 and 9/16" UNF

- Screw the high pressure connection into the internal thread of the DMP 334 according to the description of the manufacturer and tighten it properly.

⚠ DANGER! The high pressure tube seals metal-to-metal in the chamfer of the pressure port. No further seal is allowed with this high pressure connection. A wrong installation can cause enormous danger!

4. Electrical Installation

⚠ WARNING! Install the device in currentless condition only!

Establish the electrical connection of the device according to the technical data shown on the manufacturing label, the following table and the respective wiring diagram.

Pin configuration

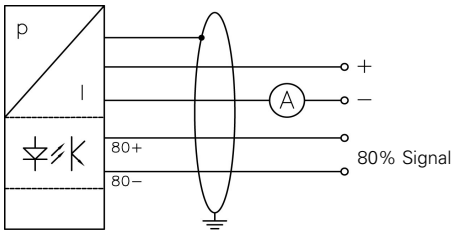
Electrical connections	ISO 4400	Binder 723 (5-pin)
Supply +	1	3
Supply –	2	4
Signal + (3-wire)	3	1
Shield	ground contact	5

Electrical connections	M12x1 (4-pin)	cable colours (DIN 47100)
Supply +	1	white
Supply –	2	brown
Signal + (3-wire)	3	green
Schirm	4	yellow / green

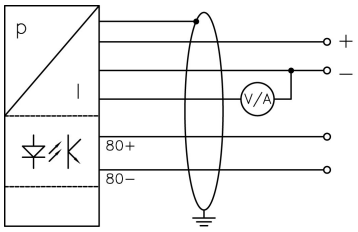
Electrical connections	MIL-/ Bendix-connection	
	2-wire	3-wire
Pin A	supply + / signal +	signal +
Pin B	supply – / signal -	supply – / signal - / calibration - (80-)
Pin C	-	supply +
Pin D	-	-
Pin E	calibration + (80+)	-
Pin F	calibration – (80-)	calibration + (80+)

Wiring diagrams:

2-wire-system (current)



3-wire-system (current / voltage)



Generation of the 80 % calibration signal:

For the generation of the 80 % calibration signal you have to put on the connection contacts 80+ and 80- a voltage about minimal 5 V in the pressureless condition. The maximum voltage has to be the same as the maximum supply voltage of the device. By feeding the voltage on 80+ and 80- an additional current about 12.8 mA is given out and there flows a complete current about 16.8 mA. Please note for IS-devices that the activation of the calibration signal has to run about the same as the supply of the signal circuit.

! For devices with cable socket, you have to make sure that the external diameter of the used cable is within the allowed clamping range. Moreover you have to ensure that it lies in the cable gland firmly and cleftlessly!

! Please note for devices with ISO 4400 plug, that the cable socket has to be mounted properly to ensure the ingress protection mentioned in the data sheet. Please check if the delivered seal is placed between plug and cable socket. After connecting the cable fasten the cable socket on the device by using the screw.

! On devices with field housings, the terminal clamps are situated under the metal cap. To install the device electrically, the cap must be screwed off. Before the cover is screwed on again, the O-ring and the sealing surface on the housing have to be checked for damages and if necessary to be changed! Afterwards screw the metal cap on by hand and make sure that the field housing is firmly locked again.

! Prevent the damage or removal of the PTFE filter which is fixed over the end of the air tube on devices with cable outlet and integrated air tube.

☞ For the electrical connection a shielded and twisted multicore cable is recommended.

☞ If a transition is desired from a transmitter cable with gauge tube to a cable without gauge tube, we recommend our terminal box KL 1 or KL 2.

5. Initial start-up

⚠ WARNING! Before start-up, the user has to check for proper installation and for any visible defects.

⚠ WARNING! The device can be started and operated by authorized personnel only, who have read and understood the operating manual!

⚠ WARNING! The device has to be used within the technical specifications, only! (compare the data in the data sheet)

6. Placing out of service

⚠ WARNING! Disassemble the device only in current and pressure less condition! Check before disassembly, if it is necessary to drained off the media before dismantling!

⚠ WARNING! Depending on the medium, it may cause danger for the user. Comply therefore with adequate precautions for purification.

7. Maintenance

In principle, this device is maintenance-free. If desired, the housing of the device can be cleaned using a damp cloth and non-aggressive cleaning solutions, in switched-off state.

Depending on the measuring medium, however, the diaphragm may be polluted or coated with deposit. Is there a pollution tendency of the medium, the user has to determine the appropriate cleaning interval. After placing the device out of service correctly, the diaphragm can usually be cleaned carefully with a non-aggressive cleaning solution and a soft brush or sponge. If the diaphragm is calcified, it is recommended to send the device to BD SENSORS for decalcification. Please note the chapter “Service/Repair” below.

! A false cleaning of the device can cause an irreparable damage on the diaphragm. Therefore never use pointed objects or pressured air for cleaning the diaphragm.

8. Service / Repair

8.1 Recalibration

During the life-time of a transmitter, the value of offset and span may shift. As a consequence, a deviating signal value in reference to the nominal pressure range starting point or end point may be transmitted. If one of these two phenomena occurs after prolonged use, a recalibration is recommended to ensure furthermore high accuracy.

8.2 Return

Upon every return of the device, no matter if for recalibration, decalcification, modifications or repair, it is necessary to contact us to guarantee a quick execution of your request. Please inform us by sending an email to: return@bdsensors.de. Include the number of devices sent and request a RMA. Afterwards clean the device, pack it shatterproof and send it to BD SENSORS indicating the RMA.

8.3 Offset and span

The offset configuration can be performed after loosing and opening of the upper closing screw via the upper potentiometer (both direction electrical connection). Use for the offset configuration a clockmaker screwdriver 0.5.

9. Disposal

The device has to be disposed of according to the European Directives 2002/96/EG and 2003/108/EG (on waste electrical and electronic equipment). It is prohibited to place electrical and electronic equipment in domestic refuse!

⚠ WARNING! Depending on the used medium, deposit on the device may cause danger for the user and the environment. Comply with adequate precautions for purification and dispose of it properly.

10. Warranty conditions

The warranty conditions are subject to the legal warranty period of 24 months from the date of delivery. In case of improper use, modifications of or damages to the device, we do not accept warranty claims. Damaged diaphragms will also not be accepted. Furthermore, defects due to normal wear are not subject to warranty services.

11. Declaration of conformity / CE

The delivered device fulfils all legal requirements. The applied directives, harmonised standards and documents are listed in the EC declaration of conformity, which is available online at: http://www.bdsensors.com/products/download/certificates.
Additionally, the operational safety is confirmed by the CE sign on the manufacturing label.